Arctic Ice Thickness: State of the Arctic Report

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Project Summary

The objective of this work is to directly support NOAA's Program Plan for Building a Sustained Ocean Observing System for Climate by expanding current efforts to monitor and document the state of the ocean to include the Arctic Ocean.

Recent observations are consistent in their indication that the Arctic region is undergoing significant environmental changes caused by a general warming of the climate. The heightened sensitivity of this environment is due, in part, to strong feedback processes that exist over both the ocean and land and are unique to this region. These amplifications create an environment that acts both as an indicator of climate change and as a potential amplifier of climate change. Because of this and the key role the polar regions play in determining the global climate, it is important to describe and to understand the state of the Arctic.

Fy2007 Accomplishments

- Completion, publication and dissemination of State of the Arctic Report

On November 16, 2006, NOAA's Public Affairs Office held a press release for the NOAA State of the Arctic Report (http://www.pmel.noaa.gov/pubs/PDF/rich2952/rich2952.pdf). The report represents the consensus of a team of 20 international scientists, covering observational data from 2000-2005. It highlights recent trends in physical components of the Arctic system, including the atmosphere, ocean, sea ice cover, and land. The observations presented in the report show convincing evidence of a sustained period of warming in the Arctic and the effects of that warming on environmental conditions such as sea ice extent and vegetation. While the report highlights a general warming of the Arctic during 2000-2005, there are a few indications that some elements of the physical system, such as the central Arctic Ocean and some wind patterns, are returning to environmental conditions more typically observed from 1950-1980.

NOAA printed 400 copies of the report. All of these were distributed.

- Contributed to the 2006 BAMS State of the Climate Report, providing the atmosphere, ocean, sea ice and land summary for the Arctic section.

- Completion and public release of the web-based Arctic Report Card

A NOAA press release on October 17, 2007 announced the availability of the web-based 2007 Arctic Report Card (http://www.arctic.noaa.gov/reportcard/). The purpose of this publication is to present clear, reliable and concise information on recent observations of environmental conditions in the Arctic, relative to historical time series records. It provides a method of updating and expanding the content of the *State of the Arctic Report*, published in fall 2006, to reflect current conditions. Material presented in the Report Card is prepared by an international team of scientists and is peer-reviewed by topical experts nominated by the US Polar Research Board. The audience for the Arctic Report Card is wide, including scientists, students, teachers, decision makers and the general public interested in Arctic environment and science. The web-based format will facilitate future timely updates and expansions of the content.

- Incorporate data from in situ observation platforms into the International Arctic Ocean Observing System (iAOOS), which will be a subcomponent of the NOAA Integrated Ocean Observing System.

During FY2007, 11 Ice Mass Balance (IMB) buoys were deployed in the Arctic Ocean to monitor changes in the thickness of the ice cover as a function of atmospheric and oceanic forcing. These buoys were deployed in conjunction with other international programs that form the basis of the developing iAOOS including:

- North Pole Environmental Observatory (http://psc.apl.washington.edu/northpole/)
- Beaufort Gyre Observatory (http://www.whoi.edu/beaufortgyre/)
- DAMOCLES (http://www.damocles-eu.org/)
- International Arctic Buoy Programme (http://iabp.apl.washington.edu/)

Background and data from the IMBs is available at:
http://www.crrel.usace.army.mil/sid/IMB/index.htm